Chapter 9: Other Economic Analyses

INTRODUCTION

This chapter presents several other economic analyses in support of the final section 316(b) New Facility Rule. These analyses address the analytic requirements of the following Acts and Executive Orders:

- Unfunded Mandates Reform Act (UMRA)
- E.O. 13132 – "Federalism"
- E.O. 13211 – "Actions Concerning Regulations that Significantly Affect Energy Supply, Distribution, or Use"
- Paperwork Reduction Act (PRA)

In addition, this chapter presents the total social costs of the final rule.

CHAPTER CONTENTS

9.1 THE UNFUNDED MANDATES REFORM ACT (UMRA) OF 1995

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA) requires that Federal agencies assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. Agencies must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with "Federal mandates" that may result in expenditures by state, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any one year (Section 202 of UMRA).[1]

Before promulgating a rule for which a written statement is needed, agencies must identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule (Section 205). The provisions of Section 205 do not apply when they are inconsistent with applicable law. Agencies may adopt an alternative other than the least costly, most cost-effective, or least burdensome alternative if they publish with the final rule an explanation of why that alternative was not adopted (Section 205). Before establishing any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, agencies must develop a small government agency plan (Section 203). The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

UMRA specifies that a written statement is needed if either (1) the cost of a regulation to *state, local, and tribal governments* exceeds $100 million in any one year, or (2) the cost of a regulation to the *private sector* exceeds $100 million in any one

[1] Federal mandates include Federal regulations that impose enforceable duties on state, local, and tribal governments, or on the private sector, excluding those related to conditions of Federal assistance and participation in voluntary Federal programs.

year.[2] The following two subsections, 9.1.1 and 9.1.2, present the costs of the final section 316(b) New Facility Rule to the government and the private sector, respectively. Subsection 9.1.3 presents a summary of the results of the UMRA analysis.

9.1.1 Compliance Costs for Governments

Governments may incur two types of costs as a result of the final rule: (1) costs to comply with the rule for in-scope facilities owned by government entities; and (2) costs to implement the rule, borne by the responsible regulatory authorities. Both types of costs are discussed below.

a. Compliance costs for government-owned entities

Of the 121 new in-scope facilities subject to the final rule, only four are expected to be owned by a government entity. Two of these are expected to be state owned, one is projected to be owned by a municipality, and one by a municipal marketing authority.

EPA determined the number of projected new in-scope facilities owned by a government entity using ownership information presented in *Chapter 8: Regulatory Flexibility Analysis* and applying the same model facility approach used to determine the number of facilities owned by small entities. Using information from Tables 8-1 and 8-4, EPA first determined which of the existing in-scope facilities, upon which EPA's model facilities are based, are owned by a government entity.[3]

Table 9-1 below presents the government entities that own one or more of the existing facilities analyzed in support of the final rule. Table 9-1 also shows the facilities each government entity owns and the model facility type assigned to each facility. None of the existing in-scope nonutility or manufacturing facilities is owned by a government entity.

[2] The $100 million test is applied separately to governments and the private sector. The term "in any one year" refers to the maximum cost in a single year, not the annualized cost over the analysis period.

[3] EPA based the model facilities on facilities identified from the section 316(b) Industry Survey (for coal and manufacturing model facilities) and on facilities identified in the NEWGen database (for combined-cycle model facilities). While most of the NEWGen facilities are future planned facilities, this section will refer to in-scope survey facilities and in-scope NEWGen facilities as "existing in-scope facilities."

Table 9-1: Government Entities Owning at Least One Existing In-Scope Facility

Name of Entity	Type	Name of Facility	Model Facility Type
Combined-Cycle Facilities			
Municipal Electric Authority of Georgia	Municipal Marketing Authority	Wansley (Meag)	CC R/FW-1
South Carolina Public Service Authority	State Government	John S. Rainey Generating Station	CC R/FW-1
Coal Facilities			
American Mun. Power-Ohio, Inc.	Municipal Marketing Authority	Richard Gorsuch	Coal OT/FW-2
Grand River Dam Authority	State Government	GRDA	Coal R/FW-3
Jacksonville Electric Authority	Municipality	St. Johns River Power	Coal R/M-1
City of Kansas City	Municipality	Nearman Creek	Coal OT/FW-2
San Antonio Public Service Bd.	Municipality	J.K. Spruce	Coal RL/FW-1
South Carolina Public Service Authority	State Government	Cross	Coal R/FW-3
Texas Municipal Power Agency	Municipal Marketing Authority	Gibbons Creek	Coal RL/FW-1

Source: U.S. DOE, 1999; U.S. EPA analysis, 2001.

EPA estimated the number of projected new in-scope facilities owned by a government entity based on the assumption that the share of *new* in-scope facilities owned by a government entity is the same as the share of the *existing* in-scope facilities owned by a government entity.[4] This analysis was conducted at the model facility level. For example, of the 15 NEWGen recirculating/freshwater facilities with relatively small capacities (model facility type CC R/FW-1), 13 are owned by a private entity (87 percent) and two are owned by a government entity (13 percent). Applying these percentages to the 18 projected new facilities of that model type results in 16 privately-owned facilities and two government-owned facilities. The same methodology was used for the other model facility types.

Table 9-2 below shows the 14 electric generator model facility types, the number of existing in-scope facilities upon which the model facilities are based (by entity type), and the total projected number of new in-scope electric generators (by entity type). The table shows that two of the 69 projected new in-scope combined-cycle facilities (or 2.9 percent) and two of the 14 projected new in-scope coal facilities (or 14.3 percent) will be owned by a government entity.[5]

[4] This assumption is consistent with the model facility approach explained in *Chapter 5: Baseline Projection of New Facilities* and used in the costing and economic impact analyses. The model facility approach assumes that the characteristics of the projected new facilities are the same as those of the existing facilities analyzed in support of this regulation.

[5] This estimate is consistent with the percentage of existing electric generators owned by a government entity (two out of 57 NEWGen combined-cycle facilities, or 3.5 percent, and seven out of 41 survey coal facilities, or 17.1 percent).

Table 9-2: Electric Generators Model New Facilities by Parent Firm Type

Model Facility Type	Cooling System Type	Source Water Body	Steam Electric Capacity (MW)	Number of Existing In-Scope Facilities				Number of Projected New Facilities	
				Privately Owned		Government Owned		Privately Owned	Govern-ment Owned
				#	%	#	%		
Combined-Cycle Facilities									
CC OT/M-1	Once-Through	Marine	1,031	4	100%	0	0%	5	0
CC R/M-1	Recirculating	Marine	489	4	100%	0	0%	5	0
CC R/M-2	Recirculating	Marine	1,030	1	100%	0	0%	1	0
CC R/FW-1	Recirculating	Freshwater	439	13	87%	2	13%	16	2
CC R/FW-2	Recirculating	Freshwater	699	17	100%	0	0%	21	0
CC R/FW-3	Recirculating	Freshwater	1,061	16	100%	0	0%	19	0
Total Combined-Cycle Facilities				**55**	**96%**	**2**	**4%**	**67**	**2**
Coal Facilities									
Coal R/M-1	Recirculating	Marine	812	2	67%	1	33%	1	0
Coal OT/FW-1	Once-Through	Freshwater	63	3	100%	0	0%	1	0
Coal OT/FW-2	Once-Through	Freshwater	515	3	60%	2	40%	1	0
Coal OT/FW-3	Once-Through	Freshwater	3,564	1	100%	0	0%	1	0
Coal R/FW-1	Recirculating	Freshwater	173	10	100%	0	0%	3	0
Coal R/FW-2	Recirculating	Freshwater	625	7	100%	0	0%	3	0
Coal R/FW-3	Recirculating	Freshwater	1,564	6	75%	2	25%	2	1
Coal RL/FW-1	Recirculating with Lake	Freshwater	660	2	50%	2	50%	0	1
Total Coal Facilities				**34**	**83%**	**7**	**17%**	**12**	**2**

Source: U.S. EPA analysis, 2001.

Compliance costs for individual facilities were presented in *Chapter 6: Facility Compliance Costs*. The two new combined-cycle facilities are projected to begin operation in 2007 and 2016, respectively; the two new coal facilities are projected to begin operation in 2005 and 2006, respectively. The maximum aggregate costs for the four government-owned facilities in any one year is estimated to be $19.1 million in 2005.

b. Implementation costs for regulatory authorities

The requirements of section 316(b) are implemented through the National Pollutant Discharge Elimination System (NPDES) permit program. Forty-four states and one territory currently have NPDES permitting authority under section 402(b) of the Clean Water Act (CWA). EPA estimates that states and the one territory will incur four types of costs associated with implementing the requirements of the final section 316(b) New Facility Rule: (1) start-up activities; (2) issuing an initial NPDES permit for each new facility; (3) reviewing and reissuing a permit for each new facility every five years; and (4) annual activities.[6]

The start-up costs are incurred only once by each of the 45 regulatory authorities. The initial permitting costs, repermitting costs, and annual activities are incurred on a per-permit basis. The per-permit costs to the regulatory authorities depend on the compliance requirements of each facility: permits for facilities that already have a recirculating system in the baseline ("Track I" facilities) will cost less than permits for facilities that are proposed with a once-through system in the baseline ("Track II" facilities). Each state's actual burden associated with the administrative functions required by the final section 316(b) New Facility Rule will depend on the number of new in-scope facilities that will be built in the state during the 20-year analysis period.

The incremental burden will also depend on the extent of each state's current practices for regulating CWIS. (EPA recognizes that these States and this territory would be required to implement section 316(b) on a case-by-case basis in the absence of this rule.) States that currently require relatively modest analysis, monitoring, and reporting of impacts from CWIS in NPDES permits may require more permitting resources to implement the final rule than are required under their current programs. For states that are actively implementing section 316(b) requirements now, the final rule may actually reduce the burden on permit writers, by clarifying key concepts in the rule and by providing easily-applied criteria for some regulatory determinations.[7]

❖ ***Start-up activities***

All 44 states and the one territory with NPDES permitting authority are expected to undertake start-up activities to prepare for administering the provisions of the final section 316(b) New Facility Rule. Start-up activities include reading and understanding the rule, mobilization and planning of the resources required to address the rule's requirements, and training technical staff on how to review materials submitted by facilities and make determinations on the section 316(b) requirements for each facility's NPDES permit. In addition, permitting authorities are expected to incur other direct costs, e.g., for copying and the purchase of supplies. Table 9-3 shows that total start-up costs of $3,564 are expected to be incurred by each of the 44 states and one territory with NPDES permitting authority.

Table 9-3: Government Costs of Start-Up Activities (per Regulatory Authority)

Activity	Costs
Read and Understand Rule	$882
Mobilization/Planning	$1,534
Training	$1,098
Other Direct Costs	$50
Total[a]	**$3,564**

[a] Individual numbers may not add up to total due to independent rounding.

Source: U.S. EPA, 2001.

[6] The unit costs associated with implementing the requirements of the final section 316(b) New Facility Rule are documented in EPA's Information Collection Request (U.S. EPA, 2001).

[7] The available information on current implementation of the section 316(b) requirements by different regulatory authorities is insufficient to allow EPA to estimate the incremental costs of the final rule to the regulatory authorities with precision. EPA therefore made the conservative assumption that permitting authorities currently do not incur administrative costs of implementing section 316(b) requirements and that all costs for new facilities under the final section 316(b) New Facility Rule are incremental costs.

❖ *Issue initial NPDES permit*

The permitting authorities will have to include the requirements of the final section 316(b) New Facility Rule in the initial NPDES permit issued to each new in-scope facility. The activities involved in determining section 316(b) requirements include reviewing submitted documents and supporting materials, verifying data sources, consulting with facilities and the interested public, determining specific permit requirements, and writing the actual permit.

Table 9-4 below shows the activities that EPA anticipates will be necessary to issue initial permits and the estimated cost of each activity. Permits that require all of the components listed in Table 9-4 are expected to impose a cost per permit of \$7,028 for Track I facilities and \$27,323 for Track II facilities.

Table 9-4: Government Costs of Initial NPDES Permit Issuance (per Permit)[a]

Activity	Track I (Recirculating)	Track II (Once-Through)
Review CWIS Location and Design Data	\$785	\$785
Determine Compliance with Source Water Body Flow Information	\$262	\$262
Review Source Water Baseline Biological Characterization Data	\$1,470	\$1,470
Review Design and Construction Technology Plan	\$1,305	
Determine Compliance with CWIS Velocity Requirements	\$262	
Determine Compliance with CWIS Flow Reduction Requirements	\$588	
Review Comprehensive Demonstration Study Plan		\$1,176
Review Source Water Baseline Biological Characterization Study		\$19,355
Review Evaluation of Potential CWIS Effects		\$1,176
Review Verification Study		\$743
Determine Monitoring Frequency	\$262	\$262
Determine Record Keeping and Reporting Frequency	\$262	\$262
Considering Public Comments	\$1,176	\$1,176
Issuing Permit	\$239	\$239
Permit Record Keeping	\$118	\$118
Other Direct Costs	\$300	\$300
Total[b]	**\$7,028**	**\$27,323**

[a] Actual per permit costs may be lower than the total cost because some facilities will not have to submit information on all compliance requirements.
[b] Individual numbers may not add up to total due to independent rounding.

Source: U.S. EPA, 2001.

❖ *Review and reissue permit every five years*

NPDES permits are issued for five years. The permitting authority therefore has to reissue the permits for the new in-scope facilities every five years following initial permitting. Before reissuing a facility's permit, the regulatory authority must determine if there have been any changes in the facility's operations or in the physical or biological attributes of the source water body. Any changes should be evaluated to determine the need for additional, or more stringent, conditions in the permit.

The final section 316(b) New Facility Rule requires facilities to submit the same type of information for their permit renewal application as was required for the initial permit. The permitting authorities will therefore have to carry out the same type of administrative activities as during the initial permitting process. The burden of these activities is expected to be smaller for permit reissuance, however, because the permitting authority is already familiar with the facility's case and the type of information the facility will provide. The reduction in costs is expected to vary by the specific repermitting activities.

Table 9-5 shows the activities that EPA anticipates will be necessary to reissue permits and the estimated cost of each activity. Permits that require all of the components listed in Table 9-5 are expected to impose a cost per permit of $2,318 for Track I facilities and $6,392 for Track II facilities.

Table 9-5: Government Costs of Repermitting (per Permit)[a]

Activity	Track I (Recirculating)	Track II (Once-Through)
Review CWIS Location and Design Data	$236	$236
Determine Compliance with Source Water Body Flow Information	$79	$79
Review Source Water Baseline Biological Characterization Data	$441	$441
Review Design and Construction Technology Plan	$391	
Determine Compliance with CWIS Velocity Requirements	$79	
Determine Compliance with CWIS Flow Reduction Requirements	$176	
Review Comprehensive Demonstration Study Plan		$353
Review Source Water Baseline Biological Characterization Study		$4,015
Review Evaluation of Potential CWIS Effects		$353
Determine Monitoring Frequency	$79	$79
Determine Record Keeping and Reporting Frequency	$79	$79
Considering Public Comments	$353	$353
Issuing Permit	$72	$72
Permit Record Keeping	$35	$35
Other Direct Costs	$300	$300
Total[b]	**$2,318**	**$6,392**

[a] Actual per permit costs may be lower than the total cost because some facilities will not have to submit information on all compliance requirements.
[b] Individual numbers may not add up to total due to independent rounding.

Source: U.S. EPA, 2001.

❖ *Annual activities*

In addition to the start-up and permitting activities discussed above, permitting authorities will have to carry out certain annual activities to ensure the continued implementation of the requirements of the final section 316(b) New Facility Rule. These annual activities include reviewing yearly status reports, tracking compliance, determining monitoring scope reduction, and record keeping.[8]

Table 9-6 below shows the annual activities that will be necessary for each permit following the year of initial permitting and the estimated cost of each activity. A total cost of $1,720 is estimated for each permit per year.

Table 9-6: Government Costs for Annual Activities (per Permit)

Activity	Track I (Recirculating)	Track II (Once-Through)
Review of Yearly Report	$613	$613
Track Compliance	$524	$524
Determine Monitoring Scope Reduction	$409	$409
Keep Records	$124	$124
Other Direct Costs	$50	$50
Total[a]	**$1,720**	**$1,720**

[a] Individual numbers may not add up to total due to independent rounding.

Source: U.S. EPA, 2001.

EPA calculated total government costs of implementing the final section 316(b) New Facility Rule by aggregating the unit costs presented in Tables 9-3 to 9-6 based on the specific permitting requirements for each of the 121 new in-scope facilities. Table 9-7 presents the rule's estimated government implementation costs for 2001 to 2030. The table shows that the highest one-year implementation costs, $356,675, will be incurred in 2001, the first year of the final section 316(b) New Facility Rule. This cost is mainly the result of start-up activities for the 44 states and one territory with NPDES permitting authority, and initial permitting for seven facilities. The total present value of government implementation costs is estimated to be $2.9 million, or $234,370 per year when annualized over 30 years at a seven percent rate.[9]

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[8] Even though EPA assessed a cost to the regulatory authority of determining monitoring scope reduction, to be conservative, EPA assumed no reduction in monitoring scope when estimating facility compliance costs.

[9] Calculation of the present value assumes that costs are incurred at the end of the year.

Table 9-7: Total Government Implementation Costs by Year and Activity

Year	Start-Up Activities	Initial Permitting	Repermitting	Annual Activities	Total Costs
2001	$156,816	$191,260	$0	$8,599	$356,675
2002		$54,646	$0	$12,039	$66,685
2003		$61,674	$0	$15,478	$77,152
2004		$144,431	$0	$20,638	$165,069
2005		$117,897	$31,960	$36,116	$185,973
2006		$138,192	$12,784	$55,034	$206,010
2007		$96,813	$12,784	$73,951	$183,548
2008		$69,490	$15,103	$87,710	$172,303
2009		$82,757	$37,160	$99,748	$219,665
2010		$144,431	$65,610	$110,067	$320,108
2011		$62,462	$50,507	$125,545	$238,514
2012		$103,052	$39,479	$135,864	$278,395
2013		$62,462	$35,405	$146,183	$244,050
2014		$55,435	$59,218	$156,502	$271,155
2015		$62,462	$102,770	$165,101	$330,333
2016		$68,702	$68,491	$175,420	$312,613
2017		$55,435	$65,610	$182,299	$303,344
2018		$55,435	$53,389	$190,898	$299,722
2019		$35,140	$74,883	$199,497	$309,520
2020		$0	$120,754	$208,096	$328,850
2021		$0	$85,912	$208,096	$294,008
2022		$0	$81,276	$208,096	$289,372
2023		$0	$69,054	$208,096	$277,150
2024		$0	$86,475	$208,096	$294,571
2025		$0	$120,754	$208,096	$328,850
2026		$0	$85,912	$208,096	$294,008
2027		$0	$81,276	$208,096	$289,372
2028		$0	$69,054	$208,096	$277,150
2029		$0	$86,475	$208,096	$294,571
2030		$0	$120,754	$208,096	$328,850
Present Value @7%	**$146,557**	**$994,747**	**$488,967**	**$1,278,078**	**$2,908,349**
Annualized @7%	**$11,810**	**$80,160**	**$39,400**	**$103,000**	**$234,370**

Source: U.S. EPA analysis, 2001.

9.1.2 Compliance Costs for the Private Sector

The private sector incurs costs under the final section 316(b) New Facility Rule to comply with the requirements for in-scope facilities. Of the 121 new in-scope facilities subject to the final rule, 117 are estimated to be owned by a private entity. The privately-owned facilities include all 38 manufacturing facilities and 79 of the 83 electric generators.

Compliance costs for individual facilities were presented in *Chapter 6: Facility Compliance Costs*. Total annualized compliance costs for the 117 privately-owned facilities are estimated to be $43.8 million, discounted at seven percent. The maximum aggregate costs for all 117 facilities in any one year is estimated to be $71.2 million, incurred in 2005.

9.1.3 Summary of the UMRA Analysis

EPA has determined that the final rule will not contain a Federal mandate that will result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or for the private sector in any one year.

Table 9-8 summarizes the costs to comply with the rule for the 121 in-scope facilities and the costs to implement the rule, borne by the responsible regulatory authorities.

Table 9-8: Summary of Total Costs (in mill.)

Sector	Total Annualized Cost			Maximum One-Year Cost		
	Facility Compliance Costs	Government Implementation Costs	Total[a]	Facility Compliance Costs	Government Implementation Costs	Total[a]
Government Sector	$3.8	$0.2	$4.1	$19.0	$0.2	$19.2
Private Sector	$43.8	n/a	$43.8	$71.2	n/a	$71.2

[a] Individual numbers may not add up to totals due to independent rounding.

Source: U.S. EPA analysis, 2001.

Table 9-8 shows that total annualized costs of the section 316(b) New Facility Rule borne by governments is $4.1 million per year. The maximum one-year costs that will be incurred by government entities is expected to be $19.2 million ($19.0 million in facility compliance costs and $0.2 million in implementation costs), incurred in 2005. Total annualized costs borne by the private sector is estimated to be $43.8 million. The maximum one-year cost to the private sector is $71.2 million, incurred in 2005. Each of the maximum costs are below the $100 million UMRA threshold. EPA therefore concludes that the final section 316(b) New Facility Rule is not subject to the requirements of Sections 202 and 205 of UMRA.

9.2 Executive Order 13132

Executive Order 13132 on "Federalism" (64 FR 43255, August 10, 1999) requires EPA to develop an accountable process to ensure "meaningful and timely input by state and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government."

Under Section 6 of Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by state and local governments, or EPA consults with state and local officials early in the process of developing the final regulation. EPA also may not issue a regulation that has federalism implications and that preempts state law, unless the Agency consults with state and local officials early in the process of developing the final regulation.

EPA determined that the final section 316(b) New Facility Rule does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. The rule will not impose substantial costs on states and localities. In addition, the rule is authorized by section 316(b) of the Clean Water Act. For these reasons, the requirements of Section 6 of the Executive Order do not apply to this rule.

9.3 Executive Order 13211

Executive Order 13132 on "Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use" requires EPA to prepare a Statement of Energy Effects when undertaking regulatory actions identified as "significant energy actions." For the purposes of Executive Order 13211, "significant energy action" means (66 FR 28355; May 22, 2001):

> "any action by an agency (normally published in the Federal Register) that promulgates or is expected to lead to the promulgation of a final rule or regulation, including notices of inquiry, advance notices of proposed rulemaking, and notices of proposed rulemaking:
>
> (1) (i) that is a significant regulatory action under Executive Order 12866 or any successor order, and
>
> (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or
>
> (2) that is designated by the Administrator of the Office of Information and Regulatory Affairs as a significant energy action."

For those regulatory actions identified as "significant energy actions," a Statement of Energy must include a detailed statement relating to (1) any adverse effects on energy supply, distribution, or use (including a shortfall in supply, price increases, and increased use of foreign supplies), and (2) reasonable alternatives to the action with adverse energy effects and the expected effects of such alternatives on energy supply, distribution, and use.

This rule is not a "significant energy action" as defined in Executive Order 13211 because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. The final section 316(b) rule could have a significant energy impact if it discouraged the construction of new electric generating capacity or if it significantly reduced the energy output from new facilities. EPA's analysis, presented in *Chapter 7: Economic Impact Analysis*, showed that the final rule is unlikely to discourage new entry, because compliance costs and economic impacts are expected to be very low. EPA therefore does not expect this rule to have adverse energy effects.

Track I of the final section 316(b) new facility rule requires facilities to install a recirculating system or other technologies that would reduce the design intake flow to a level commensurate with that of a recirculating system. For the purposes of this analysis, EPA assumed that facilities that do not already plan to install a recirculating system in the baseline will install a recirculating wet cooling tower to achieve compliance with the rule. EPA's analysis showed that five new combined-cycle facilities and four new coal facilities would be required to install a recirculating system as a result of the final rule (see analysis in *Chapter 5: Baseline Projections of New Facilities*).

Installation of a cooling tower imposes an "energy penalty," consisting of two components: (1) a reduction in unit efficiency due to increased turbine back-pressure, and (2) an increase in auxiliary power requirements to operate the recirculating wet cooling tower.[10] EPA estimates that the mean annual energy penalty for a new combined-cycle facility is 0.40 percent of generating capacity. For new coal facilities, the mean annual energy penalty is estimated to be 1.65 percent of generating

[10] EPA also considered the energy requirements of other compliance technologies, such as rotating screens, but found them insignificant and thus excluded them from this analysis.

capacity (see *Technical Development Document* for more information on EPA's determination of the energy penalty).[11]

EPA estimates that the installation of nine recirculating wet cooling towers would reduce available generating capacity by a maximum of 100 megawatts (MW) nationally. Table 9-9 below presents the model facilities which are assumed to install a cooling tower to comply with the final rule. The table also presents for each model facility type: the baseline generating capacity, the energy penalty, the estimated per facility reduction in available capacity as a result of the energy penalty, the estimated total number of new in-scope facilities; and the estimated national reduction in energy supply.

Table 9-9: New Electric Generator Model Facilities with Cooling Tower Requirements

Model Facility Type	Generating Capacity (MW)	Energy Penalty	Estimated Capacity Reduction (per Facility, in MW)	Total Number of Projected New Facilities	National Capacity Reduction (in MW)
CC OT/M-1	1,031	0.40%	4.1	5	21
Coal OT/FW-1	63	1.65%	1.0	1	1
Coal OT/FW-2	515	1.65%	8.5	1	8
Coal OT/FW-3	3,564	1.65%	58.8	1	59
Coal RL/FW-1[a]	660	1.65%	11	1	11
Total				**9**	**100**

[a] For this analysis, recirculating facilities with cooling lakes are assumed to exhibit characteristics like a once-through facility.

Source: U.S. EPA analysis, 2001.

The national capacity reduction of 100 MW presented in Table 9-9 is the *maximum* reduction as a result of this rule. This maximum reduction will be reached in 2017, when all nine facilities are estimated to have begun operation (see the Appendix to *Chapter 6: Facility Compliance Costs* for information on the on-line years of projected new in-scope facilities). The *average* capacity reduction during the 20-year analysis period (taking into account that some of these facilities will begin operation during the latter part of this period) is 74 MW annually. These estimates may be an overestimate due to the fact that some facilities may choose to comply with Track II by implementing technologies other than recirculating wet cooling towers.

EPA believes that the estimated reduction in available energy supply as a result of the final section 316(b) rule does not constitute a significant energy effect. During the period covered by EPA's new facility projection, 2001 to 2020, the Energy Information Administration (EIA) forecasts total new capacity additions of 370 gigawatts (GW) (1 GW = 1,000 MW) and an average available generating capability of 921 GW. Compared to the EIA forecasts, the estimated energy effect of the final rule is insignificant, comprising only 0.03 percent of total new capacity (100 MW/370 GW) and 0.008 percent of the average available generating capability (74 MW/921 GW).

❖ *Potential effects on rate payers*

In addition to estimating the expected reduction in available energy supply, EPA also considered potential effects of the final section 316(b) New Facility Rule on rate payers. For each model electric generation facility, EPA estimated the annualized compliance cost per KWh of generation.

Table 9-10 below shows that the maximum increase in electricity prices would be 0.17 cents per KWh for a small coal facility with a freshwater once-through system. The average price increase (weighted by the number of projected new facilities) would be 0.015 cents per KWh. This compares to national electricity price forecasts of between 7.4 to 8.0 cents per KWh for residential customers, 5.9 to 7.5 cents per KWh for commercial customers, 3.8 and 4.6 cents per KWh for industrial customers, and 4.5 to 5.4 cents per KWh for the transportation sector (DOE, 2000, Table 72). Even if the new facilities

[11] EPA estimates an energy penalty of 1.70 percent for new nuclear facilities. However, EPA does not project any new nuclear facilities to be built during the 20-year analysis period 2001-2020.

subject to the final rule could pass on their entire compliance cost to their customers, the average increase in electricity prices would only be between 0.2 percent for residential customers (0.015 / 8.0) and 0.4 percent for industrial customers (0.015 / 3.8). However, it is unlikely that the new projected facilities would be able to pass on all of their compliance costs since they are few in number and are therefore unlikely to have an effect on electricity prices.

Table 9-10: Potential Effects on Rate Payers

Model Facility Type	Total Number of Projected New Facilities	Generating Capacity (MW)	Estimated Generation (MWh)	Annualized Compliance Costs	Compliance Costs (Cents / KWh)
CC OT/M-1	5	1,031	4,709,114	$3,172,889	0.067
CC R/FW-1	18	439	2,002,373	$172,422	0.009
CC R/FW-2	21	699	3,193,938	$174,442	0.005
CC R/FW-3	19	1,061	4,846,963	$176,097	0.004
CC R/M-1	5	489	2,234,118	$198,353	0.009
CC R/M-2	1	1,030	4,703,406	$204,111	0.004
Coal OT/FW-1	1	63	428,284	$732,761	0.171
Coal OT/FW-2	1	515	3,503,722	$3,806,286	0.109
Coal OT/FW-3	1	3,564	24,246,596	$19,063,402	0.079
Coal R/FW-1	3	173	1,177,021	$169,857	0.014
Coal R/FW-2	3	625	4,249,202	$179,952	0.004
Coal R/FW-3	3	1,564	10,641,153	$240,082	0.002
Coal R/M-1	1	812	5,524,323	$235,244	0.004
Coal RL/FW-1	1	660	4,490,156	$4,787,302	0.107
				Weighted Average	**0.015**

Source: U.S. EPA analysis, 2001.

9.4 The Paperwork Reduction Act of 1995

The Paperwork Reduction Act of 1995 (PRA) (superseding the PRA of 1980) is implemented by the Office of Management and Budget (OMB) and requires that agencies submit a supporting statement to OMB for any information collection that solicits the same data from more than nine parties. The PRA seeks to ensure that Federal agencies balance their need to collect information with the paperwork burden imposed on the public by the collection.

The definition of "information collection" includes activities required by regulations, such as permit development, monitoring, record keeping, and reporting. The term "burden" refers to the "time, effort, or financial resources" the public expends to provide information to or for a Federal agency, or to otherwise fulfill statutory or regulatory requirements. PRA paperwork burden is measured in terms of annual time and financial resources the public devotes to meet one-time and recurring information requests (44 U.S.C. 3502(2); 5 C.F.R. 1320.3(b)).

Information collection activities may include:

- reviewing instructions;
- using technology to collect, process, and disclose information;
- adjusting existing practices to comply with requirements;
- searching data sources;
- completing and reviewing the response; and
- transmitting or disclosing information.

Agencies must provide information to OMB on the parties affected, the annual reporting burden, the annualized cost of responding to the information collection, and whether the request significantly impacts a substantial number of small entities. An agency may not conduct or sponsor, and a person is not required to respond to, an information collection unless it displays a currently valid OMB control number.

EPA's estimate of the information collection requirements imposed by the final section 316(b) New Facility Rule are documented in the Information Collection Request (ICR) which accompanies this regulation (U.S. EPA, 2001).

9.5 Social Costs of the Final Rule

The social costs of regulatory actions are the opportunity costs to society of employing scarce resources to reduce environmental damage. The largest component of economic costs to society generally is the estimated costs incurred by facilities for the labor, equipment, material, and other economic resources needed to comply with the final rule. Social costs also include the value of resources used by governments to implement the rule, including the costs of permitting, compliance monitoring, and enforcement activities. Finally, social costs include lost producers' and consumers' surplus that result when the quantity of goods and services produced decreases as a result of the rule.

The estimated total social cost of the final section 316(b) New Facility Rule is the sum of three cost components: (1) direct compliance costs to facilities subject to the regulation; (2) costs to permitting authorities of implementing the rule; and (3) costs to the federal government of overseeing rule implementation.

- ***Facility compliance costs*** are discussed in *Chapter 6: Facility Compliance Costs* and include technology costs, operating and maintenance costs, and permitting and monitoring costs.[12]

- ***State permitting costs*** are presented in Section 9.1.1(b) of this chapter and include start-up costs, costs for initial permit application review and permit development, repermitting costs, and costs for annual activities.

- ***Federal costs*** include the same types of costs as are incurred by states but are associated with reviewing the states' permitting actions.

Given the small number of new facilities that would incur costs under the final section 316(b) New Facility Rule, EPA expects only minimal reductions in output in the affected industries due to the final rule (see the discussions in *Chapter 7: Economic Impact Analysis* and on Executive Order 13211 in Section 9.3 of this chapter). Therefore, social costs are fully accounted for by the compliance costs incurred by the regulated facilities and the costs incurred by governments to implement the rule.

The total estimated social cost of the final section 316(b) New Facility Rule is approximately $47.9 million annually (using a seven percent discount rate and a 30 year discounting period). Direct facility compliance costs account for $47.7 million, or 99.5 percent, of the total. Annual state and federal implementation costs account for approximately $234,400 and $6,200, respectively. The present value of total social costs is $594.5 million, with facility compliance costs accounting for $591.5

[12] Direct compliance costs to facilities are often calculated differently for the economic impact analysis and the social cost estimation. Economic impact analyses often take into account the tax deductability of compliance costs to private businesses and differences between social and private opportunity costs of capital. The facility compliance costs estimated in Chapter 6, however, were not adjusted for tax effects. In addition, a single discount rate of seven percent is used in all parts of the analysis. Therefore, the costs presented in Chapter 6 represent the value to society of the resources used by facilities in compliance activities.

million, state implementation costs for $2.9 million, and federal costs for $0.08 million.

Table 9-11: Social Cost of the Final Section 316(b) New Facility Rule ($2000)		
	Present Value	**Annualized**
Facility Compliance Costs	$591,542,800	$47,670,300
State Implementation Costs	$2,908,300	$234,400
Federal Costs	$77,500	$6,200
Total	**$594,528,600**	**$47,910,900**

Source: U.S. EPA analysis, 2001.

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